

REMARKS

The present application includes claims 1-25. Claims 1-25 were rejected by the Examiner. Claims 1, 3, 11, and 21 have been amended by this response.

Claim 3 was object to because of grammatical errors. By this amendment, claim 3 has been amended as suggested by the Examiner.

Claims 1, 8-9, 11-12, and 19-21 were rejected under 35 U.S.C. 102(b) as being anticipated by the Huang textbook.

Claims 2-7, 10, 13-18, and 22-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Huang textbook in view of Takeo, U.S. Patent No. 6,231,246.

The Applicants first turn to the Examiner's rejection of claims 1, 8-9, 11-12, and 19-21 over Huang. The Huang text relates to a Picture Archiving and Communication System ("PACS"). The PACS system mentioned in Huang uses an acquisition gateway between the imaging modality and the PACS network (pg. 177). The acquisition gateway preprocesses the raw image data obtained from the imaging modality before the data is stored on the PACS network (pp. 177-180, pp. 219-231). Even the lookup table for CR image preprocessing is "built in and inserted into the image header" prior to storage (pg. 223). Thus, the raw image data is fully preprocessed before being stored as preprocessed image data on the PACS network for retrieval and display at a display workstation (pp. 177-180 and Sections 8.7-8.8).

In Huang, the preprocessing functions that are going to be applied to the raw image data have been applied or inserted into the preprocessed image data as stored in the PACS. This initial preprocessing prior to storage imposes a decision upon all subsequent viewers of the image. Such preprocessing as described in Huang eliminates the possibility for custom manipulation of the raw image data with preprocessing functions as an additional aid in diagnosis. Further image processing may be done, but the raw image data has already been preprocessed by the time it reaches the PACS display workstation. A user does not have an opportunity at the PACS display workstation to select the preprocessing functions applied to the raw image data.

Certain embodiments of the present invention preprocess raw image data that has been stored in a PACS at a PACS display workstation. Raw image data from an imaging modality is retrieved from a PACS database. A preprocessing function is selected using the PACS workstation for the raw image data. The raw image data is preprocessed at the PACS display workstation using the preprocessing function. Thus, a preprocessing function may be selected and applied to raw image data at a PACS display workstation.

The PACS mentioned in Huang does not store raw image data. This limitation is recited in independent claims 1, 11, and 21. Rather, the system of Huang stores fully preprocessed image data. The acquisition gateway preprocesses the raw image data when it is acquired from the imaging modality prior to storage at the PACS.

Additionally, the Huang text does not describe using a PACS display workstation to select a preprocessing function for the raw image data. This limitation is recited in independent claims 1, 11, and 21. On the contrary, the acquisition gateway of Huang

applies the preprocessing functions prior to storage at the PACS or retrieval at a display workstation.

Furthermore, Huang does not teach processing raw image data at the PACS display workstation by applying the preprocessing function to the raw image data. This limitation is recited in the independent claims 1, 11, and 21 of the present application. Conversely, Huang does not apply preprocessing functions at the PACS display workstation. Raw image data is stored as fully preprocessed image data before a PACS display workstation may retrieve the preprocessed image data. The acquisition gateway applies preprocessing functions to the raw image data prior to storage at the PACS and prior to retrieval by a PACS display workstation.

Therefore, the Huang text does not teach the limitations of the independent claims 1, 11, and 21 of the present application. Accordingly, the Huang text also does not teach the limitations of dependent claims 2-10, 12-20, and 22-25.

The Applicant next turns to the Examiner's rejection of claims 2-7, 10, 13-18, and 22-25 as being unpatentable over Huang further in view of Takeo. As discussed above, the Huang text discusses applying preprocessing functions to raw image data at the acquisition gateway before the image data is stored at the PACS for retrieval by a PACS display workstation. The acquisition gateway processes and stores the data as preprocessed image data on the PACS. The PACS display workstations of Huang retrieve the preprocessed image data for display.

Takeo relates to reproducing an already generated image using two image reproducing devices. In Takeo, a previously generated visible image is reproduced by two image reproducing devices, such as CRT or LCD displays or laser printers (Abstract, col. 2, lines 47-54). The two image reproducing devices use different gradation characteristics in image reproduction (col. 2, lines 54-63).

Takeo does not relate to a PACS. Takeo does not teach or suggest storing raw image data in a PACS for later retrieval and preprocessing by a PACS display workstation. Takeo is directed to reproducing coincident images on different displays (col. 1, lines 43-52, col. 2, lines 29-34 and 36-44).

Thus, Takeo does not store raw image data in a PACS database. This limitation is recited in independent claims 1, 11, and 21. The Takeo system does not teach the use of a PACS or storing raw image data. Takeo reproduces an image at a monitor or printer rather than preprocessing raw image data stored in a PACS.

The Takeo system also does not teach using a PACS display workstation to select a preprocessing function for the raw image data. This limitation is recited in independent claims 1, 11, and 21. On the contrary, Takeo does not teach the use of a PACS display workstation. The displays in Takeo simply project the image (CRT or LCD) or print the image (laser printer).

Additionally, Takeo does not teach preprocessing raw image data at the PACS display workstation by applying the preprocessing function to the raw image data. This limitation is recited in the independent claims 1, 11, and 21 of the present application. As discussed above, Takeo does not relate to preprocessing raw image data but rather

reproduces an already generated image. Furthermore, Takeo does not teach the use of a PACS display workstation to apply a selected preprocessing function to raw image data. Rather, an image processing means processes an already generated image signal, as opposed to raw image data, to accurately reproduce the image on two displays (col. 13, lines 9-19).

Therefore, the Takeo patent does not teach the limitations of the claims of the present application. Neither Takeo nor Huang teaches the storage of raw image data, as opposed to fully preprocessed or processed image data. Neither Takeo nor Huang teaches retrieving raw image data from a PACS and processing the raw image data at a PACS display workstation with a preprocessing function. Thus, the Applicant respectfully submits that neither Huang nor Takeo teaches all of the limitations of the claimed invention.

Additionally, the Applicant respectfully disagrees with the Examiner's assertion of Official Notice in several instances in the Office Action. The Applicant respectfully traverses each of the Examiner's assertions of Official Notice. Under MPEP § 2144.03, the Examiner must cite references or submit an affidavit in support of the assertions of Official Notice.

For example, the Examiner asserts that "frequency and contrast preprocessed raw image data was exceedingly well known in the art." If the Examiner is taking Official Notice by this statement, the Applicant respectfully traverses this taking of Official notice. The Applicant asserts that frequency and contrast preprocessed raw image data as

used in the present application is not “exceedingly well known” in the art. The subsequent reference to Takeo relates to a visible image and processing to reproduce a visible image rather than raw image data (col. 12, lines 18-34).

The Examiner also asserts Official Notice with regard to applying frequency preprocessing to contrast preprocessed images. The Applicant respectfully disputes the Examiner’s taking of Official Notice and asserts that applying frequency preprocessing to contrast preprocessed images is not well known or common knowledge as used in the present application. Neither the Huang PACS Components and Industrial Standards text nor the Takeo image reproduction patent teach or suggest applying frequency preprocessing to contrast preprocessed images at a PACS display workstation as claimed in the present application.

Furthermore, the Examiner took Official Notice that “storing image data created by workstations in databases was exceedingly well known in the art.” However, the Applicant respectfully asserts that storing the resultant image data in the PACS database for future retrieval after execution of the method of claim 1 is not well known in the art. This claimed limitation is neither shown in the Huang textbook or in the Takeo patent, nor is it common knowledge in the art. Neither Huang nor Takeo teach or suggest preprocessing raw image data at a PACS display workstation and storing the resultant image data in the PACS database for future retrieval.

By this response, claims 1, 11, and 21 have been amended for grammatical reasons and to provide consistency in naming. The use of the phrase "PACS display workstation" has been used consistently. As discussed above, claim 3 has also been amended as suggested by the Examiner. Thus, the Applicant respectfully submits that independent claims 1, 11, and 21, as well as their respective dependent claims, are allowable.



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CONCLUSION

The Applicant submits that the present application is in condition for allowance.

If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited and encouraged to contact the Applicant at the number below.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of GEMS-IT, Account No. 502401.

Respectfully submitted,

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